

REMARKS

It is respectfully submitted that the present application, as amended, is in condition for allowance. By virtue of this Preliminary Amendment, claims 14-19, 24-25, and 31-32 are pending. Claims 1-13, 20-23, and 27 were withdrawn in the Response to Office Action submitted on May 1, 2002. By this Preliminary Amendment, Applicants have canceled claims 28-30 without prejudice. In addition, claims 14, 15, and 24 have been amended, and new claims 31-32 have been added.

Claims 15, 17-19, and 28 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Droege*, U.S. Patent No. 5,945,084 ("*Droege*"). Claim 14 also stands rejected under 35 U.S.C. § 102(e) as being anticipated by *Firisch*, U.S. Patent No. 5,993,996 ("*Firisch*"). Claims 15-19, 24-25, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Firisch* in view of *Droege*. Claims 15, 17-18, and 28-29 also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Tan*, U.S. Patent No. 5,925,408 ("*Tan*") in view of *Droege*. In addition, claim 30 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Tan* in view of *Droege* as applied to claims 15, 17-18, and 28-29, and further in view of *Niessen et al.*, U.S. Patent No. 6,341,057 ("*Niessen*").

I. Claims 15 and 17-19 are allowable over *Droege*.

Applicants respectfully traverse the Examiner's § 102(e) rejection of claims 15 and 17-19 under *Droege*. Applicants submit that the claims, as amended, are not anticipated by *Droege* because *Droege* fails to disclose each and every limitation of these claims.

Claim 15 is an independent claim upon which claims 17-19 depend. Claim 15, as amended, recites a surface area greater than 1000 m²/g. Nothing in *Droege* teaches or discloses a *surface area greater than 1000 m²/g* as set forth in claim 15. Instead, *Droege* discloses a surface area of about 200 to about 1000 m²/g (col. 11, lines 52-53). In view of this recitation in claim 15 that is neither taught nor suggested by *Droege*, Applicants respectfully request that the Examiner withdraw the § 102(e) rejection and allow claim 15. Applicants further request that the Examiner also withdraw the § 102(e) rejection of dependent claims 17-19, since it is submitted that

independent claim 15, as amended, is allowable. Dependent claims 17-19 must *a fortiori* also be allowable, since they carry with them all the limitations of the independent claim 15 to which they refer.

II. Claim 14 is allowable over *Firisch*.

Applicants respectfully traverse the Examiner's § 102(e) rejection of claim 14 under *Firisch*. Applicants submit that claim 14, as amended, is not anticipated by *Firisch* because *Firisch* fails to disclose each and every limitation of this claim.

Claim 14 is an independent claim and, as amended, recites wherein said carbon is an activated carbon and further recites a carbon having a surface area greater than 750 m²/g. Nothing in *Firisch* teaches or discloses *an activated carbon* as set forth in claim 14. Instead, the carbon of *Firisch* teaches away from *an activated carbon*. *Firisch* teaches that “[p]referably a polymer and carbonization temperature are used which together yield a high surface area carbon without the need for an ‘activation’ step” (col. 3, lines 6-9). *Firisch* further teaches that “[a]ctivation is a disadvantage in that it constitutes an extra processing step, and in addition, it is a difficult process to do reproducibly ... and furthermore the activating agent can preferably react at the surface of a porous carbon, resulting in homogeneity” (col. 2, lines 36-42). In addition, *Firisch* teaches that “the method disclosed in the present invention produces a high surface area monolithic carbon in a process that requires no activation” (col. 2, lines 42-45).

Moreover, *Firisch* does not disclose a carbon having *a surface area greater than 750 m²/g* with “sufficient specificity to constitute an anticipation under the statute” as required by MPEP § 2131.03. *Firisch* teaches that the surface area for a carbonized polymer “should be greater than 500 m²/g and preferably greater than 750 m²/g (col. 4, lines 50-51). However, *Firisch* does not provide a specific example within the disclosed range of “preferably greater than 750 m²/g” (col. 4, lines 50-51). Instead, the surface area disclosed by example in *Firisch* is 750 m²/g (col. 8, lines 26-29). *Firisch* further discloses that “[i]t is the surface area and the pore size distribution properties of the carbonized polymer which are principally responsible for the monolith's high performance as a supercapacitor electrode” (col. 4, lines 47-50). In support of such disclosure, *Firisch* merely

discloses that the surface area is "preferably greater than 750 m²/g" (col. 4, lines 50-51) but does not teach that the surface of the carbon in *Firisch* actually comprises a surface greater than 750 m²/g. For instance, when describing the carbon product in the summary of the invention and the specification, *Firisch* merely discloses "a surface area of over 500 m²/g" (col. 2, line 55) and "a high surface area (at least 500 m²/g)" (col. 6, lines 12-14). The Applicants in their present specification provide examples of activated carbons with surface areas higher than 750 m²/g (Tables 6 and 9).

Therefore, in view of the recitations in claim 14, as amended, of an activated carbon and a carbon having a surface area greater than 750 m²/g, the Applicants respectfully request that the Examiner withdraw the § 102(e) rejection and allow claim 14.

III. Claims 15-19 and 24-25 are allowable over *Firisch* in view of *Droege*.

Applicants respectfully traverse the Examiner's § 103 rejections of independent claims 15 and 24 as being allegedly unpatentable over *Firisch* in view of *Droege*. Applicants submit that, contrary to MPEP § 2143, the Examiner has failed to make out a *prima facie* case of obviousness in rejecting independent claims 15 and 24.

Independent claim 15 requires a carbon wherein the carbon is an activated carbon and having an average pore size greater than 10 nm. Independent claim 24 requires a porous carbon monolith comprising an activated carbon and having a pore size greater than 10 nm.

Firisch discloses a carbon material prepared "without the need for an 'activation' step" (col. 3, lines 1-9). *Firisch* teaches that "[a]ctivation is a disadvantage in that it constitutes an extra processing step, and in addition, it is a difficult process to do reproducibly ... and furthermore the activating agent can preferably react at the surface of a porous carbon, resulting in inhomogeneity" (col. 2, lines 36-42). *Firisch* further teaches that "the method disclosed in the present invention produces a high surface area monolithic carbon in a process that requires no activation" (col. 2, lines 42-45). *Firisch* does not even remotely teach or suggest an activated carbon as recited in claims 15 and 24. Therefore, *Firisch* must be said to teach away from the Applicants' claimed

structure of an activated carbon. In addition, *Firisch* does not even remotely teach or suggest a pore size greater than 10 nm as recited in claims 15 and 24. Instead, *Firisch* discloses pore sizes of 2-10 nm (col. 4, lines 52-53). Applicants therefore submit that *Firisch* cannot make independent claims 15 and 24 obvious because *Firisch* does not teach or suggest all of the recited elements of the claims.

Moreover, contrary to MPEP §§ 2143.01 and 2143.02, the Examiner has failed to articulate a suggestion to combine *Firisch* with *Droege* with a reasonable expectation of success. The *prima facie* case of obviousness is thus yet further lacking. *Firisch* does not disclose an activated carbon nor a pore size greater than 10 nm. *Droege* does disclose an activated carbon and a pore size greater than 10 nm (col. 13, lines 42-46 and 60-63). However, a combination of *Firisch* with *Droege* would teach away from the carbons of Applicants' invention. For instance, the low density open cell carbon foams of *Droege* exhibit a drop in density with a corresponding increase in pore size (col. 19, Table 1). As an example of such a drop, the low density open cell carbon foams shown in Table 1 exhibit decreasing densities as the corresponding pore size is increased from 5 nm to 20 nm (col. 19, Table 1). Carbons exhibiting such decrease in density teach away from Applicants' claimed invention. The carbon claimed in independent claims 15 and 24 do not exhibit such a decrease in density corresponding to an increase in pore size (Specification, pages 20-21, table 9). For instance, Table 9 shows properties of different samples of activated carbons of the Applicants' invention. The table does not display the carbons' densities but one of ordinary skill in the art would know that the density can be easily calculated by dividing the volumetric capacitance by the gravimetric capacitance. Table A below shows a density comparison of the carbons displayed in Table 9 of the Applicants' present specification that have the similar activation temperature of 850 °C. Please note that the densities displayed in Table A were calculated as discussed above.

TABLE A

Sample	Pore Size (nm)	Density (g/cc)
19	11	0.68
24	28	0.65
20	75	0.70

As shown in Table A above, the carbons of the Applicants' present invention do not decrease in density with an increase in pore size. Consequently, combining the teachings of *Firisch* with the teachings of *Droege* would teach away from the Applicants' claimed invention in independent claims 15 and 24 because the carbons of the combined teachings of *Firisch* in view of *Droege* would be different than the carbons as claimed in the present invention. Therefore, *Droege* cannot be used to provide the carbons of *Firisch* with an activated carbon and a pore size greater than 10 nm.

Accordingly, Applicants respectfully request that the Examiner withdraw the § 103 rejection and allow claims 15 and 24. Since independent claims 15 and 24 are submitted to be allowable, dependent claims 16-19 and 25 must *a fortiori* also be allowable, since they carry with them all the limitations of independent claims 15 and 24.

IV. Claims 15 and 17-18 are allowable over *Tan* in view of *Droege*.

Applicants respectfully traverse the Examiner's § 103 rejections of claim 15 as being allegedly unpatentable over *Tan* in view of *Droege*. Applicants submit that, contrary to MPEP § 2143, the Examiner has failed to make out a *prima facie* case of obviousness in rejecting independent claim 15.

Independent claim 15 requires a carbon having an average pore size greater than 10 nm. *Tan* discloses carbons having a microporous structure with pore sizes of 6-15 Å, which is 0.6-1.5 nm (col. 2, lines 61-64). *Tan* does not even remotely teach or suggest an average pore size greater than 10 nm. Applicants therefore submit that *Tan* cannot make independent claim 15 obvious because *Tan* does not teach or suggest all of the recited elements of claim 15.

Moreover, contrary to MPEP §§ 2143.01 and 2143.02, the Examiner has failed to articulate a suggestion to combine *Tan* with *Droege* with a reasonable expectation of success. The *prima facie* case of obviousness is thus yet further lacking. *Tan* does not disclose an average pore size greater than 10 nm. As discussed in Section III, *Droege* does disclose a carbon having a pore size greater than 10 nm (col. 13, lines 60-63). As further discussed in Section III, the low density open

cell carbon foams of *Droege* teach away from the Applicants' invention because such carbons exhibit a drop in density with a corresponding increase in pore size (col. 19, Table 1). The carbons of Applicants' invention do not exhibit such a decrease in density corresponding to an increase in pore size, as discussed in Section III and shown in Table A above. Consequently, combining the teachings of *Tan* with the teachings of *Droege* would teach away from the Applicants' claimed invention in independent claim 15. Therefore, *Droege* cannot be used to provide the carbons of *Tan* with an average pore size greater than 10 nm.

Accordingly, Applicants respectfully request that the Examiner withdraw the § 103 rejection and allow claim 15. Since independent claim 15 is submitted to be allowable, dependent claims 17-18 must *a fortiori* also be allowable, since they carry with them all the limitations of independent claim 15.

V. New independent claims 31 and 32 are allowable.

Applicants point out that new independent claims 31 and 32 carry additional limitations over claims 15 and 24, respectively, on which they are patterned. Since claims 15 and 24 are respectfully submitted to be allowable, Applicants submit that claims 31 and 32 must *a fortiori* also be allowable. Therefore, it is respectfully submitted that all pending claims are in condition for allowance.

VI. Conclusion

Applicants believe that in view of the foregoing remarks, pending claims 14-19, 24-25, and 31-32, as amended, are allowable and that the present application is now in full condition for allowance, which action Applicants earnestly solicit. If the Examiner has any questions or comments regarding the foregoing, the Examiner is requested to telephone the undersigned.

If any fees are inadvertently omitted or if any additional fees are required or have been overpaid, please appropriately charge or credit those fees to Conley Rose, P.C. Deposit Account Number 03-2769 (ref. 1867-00202) of Conley Rose, P.C., Houston, Texas.

Respectfully submitted,



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